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REMARKS

Claims 1-27 are pending in the application. This Request for Reconsideration is submitted responsive to the Office Action dated October 29, 2004, setting forth a final rejection of Claims 1-27.

Objections to the Drawings

Page 2 of the Office Action required that formal drawings be submitted, and the Office Action summary noted that the originally filed drawings filed on 8 June 2001 were objectionable. Applicants note that formal drawings were submitted by the Applicants on March 30, 2004. The Examiner is requested to review the drawings submitted on March 30, 2004, and to identify whether such drawings are acceptable.

Rejections under 35 U.S.C. § 102

Pages 2 - 3 of the Office Action set forth a rejection of independent claims 1, 12, and 27, and dependent claims 2-3, 5, 10, 13-14, 17, 19-22, and 25 as allegedly being anticipated by U.S. Patent No. 6,384,766 to Ulander. Applicants request reconsideration of this rejection.

Claim 1 sets forth a radar system that includes: an aircraft for detecting buried objects from the air, for overflying a target area of interest; a radar transmitter, carried by the aircraft, for producing a pulsed radar signal having a carrier frequency of at least three gigahertz; a plurality of radar receiving antennas, carried by the aircraft and forming an antenna array, for receiving a reflected signal produced by reflection of said radar signal; and a processor for generating a three-dimensional image of said object from the reflected signal.

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Ulander is directed to a method for combining two different SAR signals SAR1 and SAR2 to generate a three dimensional image of a ground area.

The Office Action points to the SAR signals SAR1 and SAR2 as corresponding to the claimed plurality of radar radar receiving antennas, carried by the aircraft and forming an antenna array, for receiving a reflected signal produced by reflection of said radar signal transmitted by the radar transmitter on the aircraft.

However, Ulander's SAR1 and SAR2 do not correspond to two radar receiving antennas on the same aircraft. The SAR1 and SAR2 signals are received by different SARs travelling along offset paths. See, for example, Figure 7, reproduced here for convenience, which shows the SAR1 and SAR2 travelling along non-parallel paths. This indicates that the SAR receivers are carried by *different* aircraft flying offset paths over the same area, or that the SAR1 and SAR2 signals are received by a SAR receiver as it is carried by an aircraft as the aircraft sequentially overflies a ground location along offset flights paths. The two offset paths give a stereo view that can be processed to obtain a third dimension of height in addition to the cross-track and along track resolution. Nothing in Ulander indicates that the aircraft carries a plurality of radar receiving antennas for receiving the arrays, or that SAR1 and SAR2 are two receivers carried by the same aircraft and forming an array.

Thus, Ulander does not disclose the claimed plurality of radar radar receiving antennas, carried by the aircraft and forming an antenna array, for receiving a reflected signal produced by reflection of said radar signal transmitted by the radar transmitter on the aircraft.

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Accordingly, Ulander does not disclose a system having all the features set forth in Claim 1, and cannot anticipate Claim 1.

Independent Claims 12 and 27 also include the feature that the aircraft carries a plurality of radar receiving antennas forming an array. Accordingly, these claims are not anticipated by Ulander for at least the same reasons that Claim 1 is not anticipated.

In addition, Claim 12 recites the step of "receiving a return of the transmitted signal reflected by the subsurface object with at least one of a plurality of radar receiving antennas disposed on the aircraft and receiving a receiving array". It is respectfully submitted that Ulander does not disclose its radar system receiving a return of a transmitted signal reflected by the subsurface object. The only mention in Ulander of below-ground surface penetration is in a general discussion of using SAR radars to image layers of above-ground and below-ground locations in the Background of the Invention section at column 1, lines 50-56. There is no disclosure of any embodiment in Ulander that both transmits a pulsed radar signal having at least 3 GHz carrier frequency and that receives a return of the transmitted signal reflected by the subsurface object. The examples in Ulander include a VHF band SAR transmission with frequencies below 100 MHz for mapping the ground, and with high frequencies above 10 GHz for mapping the above ground vegetation. See column 9, line 52 - column 10, line 30 and column 10, line 31-50. There is no disclosure in Ulander of subsurface transmission and reflection from a subsurface object with a pulsed radar signal having at least 3 GHz carrier frequency.

Ulander cannot anticipate Claim 12 for at least this additional reason.

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The dependent claims 2-3, 5, 10, 13-14, 17, 19-22, and 25 are believed to be allowable for at least the same reasons that Claims 1, 12, and 27 are allowable, however, a few comments regarding claims 19 and 20 are provided to expedite prosecution.

Dependent Claim 19 recites that the carrier frequency signal is frequency modulated or phase modulated. Dependent Claim 20 recites that the carrier frequency is frequency modulated. The Office Action points to Ulander at column 8, lines 9-12 as disclosing this feature. However, this portion of Ulander, which recites that "A alternative to dividing the vertical measurement into two parts is instead to directly maximise the cross-correlation for the carrier-wave-modulated SAR signals", does not disclose any frequency or phase modulation, only that the Ulander SAR signals are carrier-wave-modulated.

Rejections under 35 U.S.C. § 103

The secondary references identified in the Office Action (U.S. Patent No. 5,867,117 to Gogineni, U.S. Patent No. 4,675,677 to von Maydell et al., U.S. Patent No. 4,797,680 to Smethers, Jr., U.S. Patent Publication No. 2003/0076254 to Witten, U.S. Patent No. 6,626,078 to Thornton, and U.S. Patent No. 5,673,050 to Mousally) fail to remedy the deficiencies of Ulander. Accordingly, a prima facie case of obviousness for claims 4, 6-9, 11, 18, 23, 24, and 26 has not been established.

Conclusion

For at least the foregoing reasons, withdrawal of the rejections of Claims 1-27 is respectfully requested.

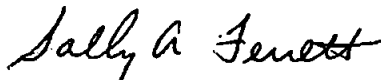
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The application is believed to be in condition for allowance. Early and favorable action in the form of a Notice of Allowance is requested.

Although no fee is believed to be due, the Director is authorized to charge any fee which may be due, or credit overpayments, to Deposit Account 50-0281.

Should there be any questions regarding this submission, or regarding the application in general, Examiner Alsomiri is cordially invited to contact the undersigned at the number below.

Respectfully Submitted,



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